

REMARKS

At the outset, Applicant wishes to thank the Examiner for the obviously thorough examination of this reissue application. In the remarks that follow, Applicant will use the same format with the same captions used by the Examiner in the Office Action.

Manner of Making Amendments

It is believed that the amendments to the specification and claims now comply with 37 C.F.R. §1.121(b)(1)(iii) and 37 C.F.R. §1.121(b)(2)(i)(C).

Broadening and Recapture

Applicant agrees that the claims are being broadened but would note that such broadening is the result of an error in failing to claim the invention disclosed in the drawings and the specification.

Comments on Protest

Applicant agrees with the Examiner that there is no basis for rejecting any claim under 35 U.S.C. §102(g) as alleged by Protestor. Indeed, Applicant finds the allegation ludicrous. Applicant's amended claims cover products that Applicant invented--not the Protestor. With respect to the Protestor's allegations of inequitable conduct, Applicant is at a loss to discern why the existence of current and pending litigation between Clearstream and the Protestor relates, in any way, to the validity of the reissue application, since that litigation relates to an entirely different patent. Clearly, Exhibit 4 attached to the Protest discloses no information that would be material to the validity of the reissue application. Other than make the preposterous allegation regarding inequitable conduct, the Protestor has failed to divulge any information that would

apprise Applicant of the basis of the allegation. The Protest does not merit a detailed response and the lack of such is not to be construed as acquiescence, in any way, to any aspect of the Protest.

35 U.S.C. §102 - Anticipation

a) §102(a)

Applicant agrees with the Examiner that Protestor has presented no competent evidence to sustain the rejection under 35 U.S.C. §102(a).

b) §102(b) - McKinney '470

Claims 1, 5, 9, and 11-24 stand rejected as anticipated by U.S. Patent No. 5,221,470 (hereinafter "McKinney '470"). Cancellation of Claim 11 moots the rejection as to that claim and claims dependent thereon.¹ In all other respects, the rejection is respectfully traversed. Fundamentally, the Examiner's position is that McKinney '470 discloses two hoses, each of which has a diffuser at its end, the hoses branching off of a common air line, separately valved, and that when a diffuser fails for whatever reason such that the air hose needs to be removed for repair or replacement, the hose is disconnected from the valve manifold and pulled out of the rigid conduit. From this, the Examiner concludes that the skilled artisan would have understood that the unit of the McKinney '470 patent was not intended to be taken out of service while the ill-functioning diffuser was being replaced or repaired; i.e., while the replacement or repair was occurring, the other aerator would be operative. Thus, it is posited that McKinney discloses a single aeration system (Claims 1 and 9) or a single injection system (Claim 11). At least part of the Examiner's reasoning is that there is no disclosure of shutting down the supply of air during

¹Claim 11 is being cancelled since Applicant deems that claim redundant in view of other pending claims.

the hose replacement and that the provision of three shutoff valves or a three-way valve is clearly intended to allow for operation of the chamber with the single unit during any air hose replacement or repair procedure.

To begin with, it is respectfully submitted that the Examiner has overlooked that McKinney '470 teaches in column 2, lines 68-column 3, line 2 that the system has a main control valve 48 [*sic*] that is located in supply line 48. Clearly, it is the function of the main control valve to stop air flow to both air lines--i.e., such that there is no air flowing through either valve 42 or 44. Thus, it is clearly contemplated by McKinney '470 that, if desired, there is no air flowing to the system through either air hose. Indeed, if such were not the case, there would be no reason for the incorporation of the main supply valve 46. With respect to the cited lines and their reference to the use of a three-way valve, this is deemed to be an alternative to the main valve 46 and valves 42 and 44. If it is to be an alternative, then it necessarily follows that such a three-way valve is also capable of cutting off flow of either of the air lines. In either event, it is unquestioned that McKinney '470 contemplates a condition where there is no air flow through either of the air hoses.

Assuming arguendo that the Examiner is correct that if one of the air hoses were plugged, the other would be functioning, that is, at best, an accidental anticipation since McKinney '470 clearly contemplates that both air hoses be functional at all times. Indeed, if that were not the case, then McKinney '470 in column 3, lines 3-10 would not expressly teach that when one of the air hoses needs to be removed for repair or replacement, it can be disconnected from the valve manifold, pulled out of the rigid conduit, and a new or repaired hose then threaded back through the rigid conduit and reconnected to the valve manifold. Without question, McKinney '470 contemplates the continuous use of two air diffusers, which Applicant notes in passing are

180° apart. It is respectfully submitted that McKinney '470 does not anticipate Claims 1, 5, 9, or 11-24.

c) §102(b) - Nolen

Claims 9, 11-15, and 22 stand rejected as being anticipated by U.S. Patent No. 4,983,285 to Nolen.

i) Claims 9, 22

Claim 9 has been amended, *inter alia*, to recite that the substantially flat bottom wall provides a substantially planar surface under the partition. This alone distinguishes Claim 9 over Nolen. Indeed, the Nolen reference highlights the nature of Applicant's invention. Note that in the in column 3, line 33 *et seq.*, the Nolen patent teaches that the deflector ring 15, which is located in the bottom opening of the clarifier, cooperates with the deflector cone 16 to direct and guide the up and down, circular water flow in the tank between the cone and the outer wall of the cylinder, a condition that, according to the cited lines, is caused by the aeration subsystems typically included in prior art systems. In effect, the structure shown in Nolen is designed to prevent settling of solids below the cone, and to this end, Nolen relies on the cooperation between the deflector ring 15 and the deflector cone 16. The design of Nolen is effectively described in column 2, lines 3-10 of Applicant's patent. As also noted in column 2, lines 27-34 of Applicant's patent, sludge accumulation can occur at the base of a deflector, such as shown in Nolen, and even worse, directly below the clarifier chamber, in the absence of such a deflector. As further taught in the cited lines of Applicant's patent, this sludge buildup results in the release of nitrogen gas, and when the sludge is disposed below the clarifier chamber, the nitrogen bubbles up into the clarifier chamber, produces scum, and interferes with the operation of the clarifier. In effect, the sludge is carried into the clarifier by the nitrogen. Thus, the problem that Applicant solves is preventing the accumulation of sludge below the clarifier, and, as per Claim

9, this is accomplished by the combination of a substantially planar surface below the clarifier and an aeration system providing an aeration area close to the bottom of the aeration chamber and close to the side wall of the aeration chamber that sets up the claimed current pattern, all as set forth in Claim 9. Clearly, the Nolen reference, which shows a deflector cone below the bottom opening of the clarifier and fails to disclose or suggest the claimed current pattern, does not anticipate Claims 9 or 22, which recite that there is a substantial planar surface under the partition (clarifier 13 of Nolen).

ii) Claims 11-15

Cancellation of Claim 11 moots the rejection as to that claim and claims dependent thereon.

d) §102(e) - McGrew '818

Cancellation of Claim 11 moots the rejection as to that claim and claims dependent thereon.

e) §102(f)

Applicant agrees with the Examiner that the Protestor has submitted no competent evidence that Protestor is a co-inventor of any pending claim in this reissue application.

f) §102(g)

Applicant agrees with the Examiner's position that the Protestor has not established any basis for rejection under 35 U.S.C. §102(g).

35 U.S.C. §103(a) - Obviousness

a) McGrew '818 in view of McKinney '470

Cancellation of Claim 11 moots the rejection.

b) "Clearstream® When Experience Counts™"

Claims 1, 3-5, and 7-24 stand rejected as obvious over Applicant's admission that the reference cited by the Applicant entitled "Clearstream® When Experience Counts™" (hereinafter "Clearstream Brochure") is admitted prior art. The rejection is traversed for the reason that the Clearstream Brochure was inadvertently stated to be prior art when in fact such is not the case.² To establish that the Clearstream Brochure is not prior art, enclosed herewith is the Declaration of Jerry McKinney (hereinafter "McKinney Declaration"), Applicant herein and the former president of Clearstream Wastewater Systems, Inc., to the effect that the Clearstream Brochure was first published in October of 1997. The McKinney Declaration and the Exhibits thereto establish that the Clearstream Brochure did not constitute a prior sale or offer for sale or use prior to July 14, 1996, nor was the Clearstream Brochure published before July 14, 1996. Accordingly, it is respectfully submitted that the Clearstream Brochure does not constitute prior art.

c) Admitted Prior Art in View of McKinney '470

Claims 1 and 3-6 stand rejected as obvious over the admitted prior art--i.e., the Clearstream Brochure--in view of McKinney '470. As noted above, the Clearstream Brochure is in fact not prior art. Accordingly, the combination of the Clearstream Brochure with McKinney '470 cannot be combined to render Claims 1 and 3-6 obvious.

i) Scope of Admission Portion of Patent Claim 6

This portion of the Office Action, which extends from the last three lines of page 13 through the end of page 17, is premised on Applicant's erroneous admission that the Clearstream Brochure is prior art. As noted above, and as established by the McKinney

²Applicant is grateful to the Examiner for the requested clarification as to why the Clearstream Brochure was prior art. As evidenced by the Information Disclosure Statement, a substantial amount of prior art, including brochures and articles, was cited. Apparently, the Clearstream Brochure was inadvertently included in this prior art and listed on the Information Disclosure Statement when, in point of fact, it was not prior art.

Declaration, the Clearstream Brochure is not prior art. Accordingly, it is respectfully submitted that any and all of the rejections contained in those portions of the Office Action are mooted.

35 U.S.C. §112(2) - Particularity of Claims

It is believed that the amendments to the claims overcome all of the rejections under 35 U.S.C. §112(2). With respect to the recitation in the claims that the bacteria convert the organic solids to water and carbon dioxide, all of the claims have been amended to recite that the aerobic action is to digest the organic solids, language that can be found at numerous locations in the patent (see, for example, column 3, lines 43-44). It is also respectfully submitted that the amendments to Claims 7 and 10 remove the §112 rejections as to those claims set forth on pages 20-21 of the Office Action.

35 U.S.C. §112(2) - Claims Not Directed to Applicant's Invention

Claims 12-17, 19, 21, 22, and 24 stand rejected under §112, second paragraph, as failing to set forth subject matter that Applicant regards as his inventions. The thrust of this rejection is that these claims specifically recite more than one diffuser and accordingly are not supported by the original disclosure because one of ordinary skill in the art would have understood Applicant to have been in possession of this invention, only in situations in which one diffuser would be inadequate to deliver a sufficient amount of oxygen. The Examiner relies primarily on column 3, lines 50-60 of the patent and the fact that not a single original claim in Applications Serial No. 08/892,281 recited more than one diffuser or drop line. Thus, the Examiner concludes that the skilled artisan would have understood that "a diffuser" in both the written description and the original claims meant "one and only one diffuser," not "at least one diffuser."

It is respectfully submitted that the Examiner has overlooked the wording in column 6, lines 17-22 of the patent, where it is stated that a preferred embodiment includes the use of multiple diffusers, which allows the introduction of a higher volume of oxygenation gas while creating the circulation or current pattern of the invention. The clear teaching of those lines is that multiple diffusers can be employed and that, while they clearly allow the introduction of a higher volume of oxygenation gas, they still create the circulation or current pattern of the invention. Furthermore, in column 6, lines 42-48 of the patent, it is pointed out that the oxygenation gas can be delivered in many ways to the diffuser *location* and that, in addition to the drop lines, aeration pipes or the like can be used, the release of the oxygenation gas to create the circulation pattern of the invention encompassing all such deliveries. Firstly, the cited lines speak to the issue of a “diffuser location” as opposed to a single diffuser. Moreover, lest there be any doubt, the use of the plural “lines” and “pipes” as being suitable to create the “circulation pattern” of the invention makes it abundantly clear that while a “diffuser location” was contemplated, multiple diffusers to create that “diffuser location” were clearly contemplated. It is respectfully submitted that Claims 12-17, 19, 21, 22, and 24 comply with the mandate of §112, second paragraph.

35 U.S.C. §112(1) - Description

The specification is objected to and Claims 7, 18, 19, 9, 22, 10, 23, 24, 12-17, and 21 are rejected under §112, first paragraph as containing subject matter that was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor, at the time the application was filed, had possession of the claimed invention. It is believed that the amendments to Claims 7, 10, and 9 obviate this §112 rejection. Indeed, Applicant wishes to thank the Examiner for pointing out that, for all intents and purposes, the

“means for injecting an oxygenation gas” and the “means to generate a wastewater current in the aeration chamber” (Claims 7 and 10) or “means for injecting an oxygenation gas” in “aeration system” (Claim 9) are in reality not distinct structures in the sense that there is one structural component that injects an oxygenation gas and another, separate component, that generates the current or constitutes the aeration system. In any event, the amendments to Claims 7, 9, and 10 remove the rejection under §112, first paragraph.

As to Claims 12-17, 19, 21, 22, and 24, Applicants remarks with respect to the prior section of the Office Action are equally applicable here. As pointed out in those remarks, Applicant was indeed in possession of the invention vis-à-vis the use of multiple diffusers as opposed to “one and only one diffuser.”

35 U.S.C. §132 - New Matter Objection

The Examiner contends that the insertion to column 3, line 60 is not supported by the original disclosure. Specifically, the Examiner argues that the added wording provides support for the creation of upward currents by the use of multiple diffusers. This is true, and it is a facet of Applicant’s invention. The Examiner’s position is that only one upward current is suggested by the original specification but that the added subject matter provides support for horizontal separation of two diffusers to such an extent that two distinct currents are created thereby. Applicant respectfully takes issue with the Examiner’s position that there is no original support for this concept. As was discussed above, there is clearly ample support for the use of multiple diffusers, albeit that the Examiner has construed that language to mean that the use of multiple diffusers is predicated on there being a need to provide sufficient quantities of oxygen. As was exhaustively pointed out above, the concept of multiple diffusers, without any regard to the need for additional oxygenation, finds ample support in the original application. That being the case,

if multiple diffusers are employed, must they be so close to one another that there is only a single upward current? Applicant respectfully submits that the answer to that question is distinctly, “No.”

In column 3, lines 31-42 of the patent, it is pointed out that the introduction of diffused oxygenation gas or air in a single location close to the bottom and the side wall of an aeration chamber produces a defined current “or circulation pattern” that generally maintains all solids in circulation. Further, the cited lines state that this diffuser location “forces a specific current or *pattern of circulation* which sweeps fluid from every portion of the plant such that solids will remain well mixed in solution instead of accumulating as sludge” (emphasis supplied). Note further that in column 5, line 12 *et seq.* of the patent, in describing movement of the fluid in the aeration chamber, Applicant refers to a “circulation pattern” (column 5, line 12). The concept of setting up a circulation pattern is even visually depicted in Fig. 5.³ In column 6, lines 17-25, it is pointed out that the use of multiple diffusers not only allows the introduction of a higher volume of oxygenation gas, but also creates the circulation or “current pattern” of the invention.

It is abundantly clear from the specification and the drawings that the circulation or current pattern generated pursuant to the present invention must be in accordance with that shown in Fig. 5; however, that does not mandate that such a circulation pattern can only, or must, be generated by a single diffuser. To begin with, it is implicitly recognized that multiple diffusers can be employed and the circulation pattern shown in Fig. 5 still be maintained. This is established by the wording in column 3, line 31 *et seq.* quoted by the Examiner on page 25 of the Office Action. Accordingly, given that it is expressly recognized in the application that the current or circulation pattern of Fig. 5 can be established with the use of multiple diffusers, and

³It should be noted that in column 4, lines 13-25, the descriptions of Figs. 4, 5, 6, and 7 all refer to a “circulation pattern.”

given further, as pointed out above, that there is ample support for the use of multiple diffusers, matter not the need for additional oxygenation, it is beyond peradventure that the addition of the matter in column 3, line 60 or column 5, line 37 does not constitute the addition of new matter. It should be noted that the Examiner refers to column 5, line 52 for support that the two diffusers must be positioned close to each other--i.e., in the order of 3 to 4 inches apart. The "3 to 4 inches" recitation in column 5, line 52 does not refer to the horizontal spacing between the diffusers, but rather to *the distance of the diffusers from the bottom* of the plant. It should be noted that Applicant has amended the additional language starting at column 5, line 37 to recite that the multiple aeration sources could be positioned in sufficient proximity to one another such that the circulation or current pattern shown in Fig. 5 is achieved.

It is respectfully submitted that Applicant was clearly in possession of the use of multiple diffusers that were not necessarily located so close together that they produced a single coalesced current flow, but rather were located in close enough proximity to one another that the circulation or current pattern depicted in Fig. 5 was achieved.

On page 27 of the Office Action, the Examiner contends that the textural matter added in column 5 would have given the skilled artisan a basis to conclude that Applicant understood the term "adjacent" to read on placement of the diffusers far above the bottom wall as element number 100 as shown in Fig. 1. It is respectfully submitted that this position is refuted by repeated references to the fact that the diffuser area is located close to the bottom of the plant and, more specifically, as seen in column 5, lines 52-55, that the differences are within "3 to 4 inches" from the bottom. It is respectfully submitted that the added language and the word "adjacent" when read in the context of the drawings and the other descriptive material in the specification clearly rule out any contention that the diffuser could be located at an elevation that is closer to the lid than to the bottom wall.

In view of the foregoing, it is respectfully submitted that the added material in column 3 and column 5 does not constitute new matter and as such need not be cancelled in response to this Office Action.

35 U.S.C. §251 - New Matter

Claims 7, 18, 19, 9, 22, 10, 23, 24, 12-17, and 21 stand rejected under §251 as being based upon new matter added to the patent for which reissue is sought. It is respectfully submitted in view of the remarks above that the claims are not based upon new matter and fully comply with all relevant paragraphs of §112 and 35 U.S.C. §132.

37 C.F.R. §1.175 - Defective Reissue Oath

Applicant respectfully submits that the oath submitted with the application is proper. Specifically, it is respectfully submitted that Applicant need not specify whether “more” or “less” was claimed than Applicant had a right to claim. Indeed, Section 1414 of the M.P.E.P. specifically states:

Alternatively, a declaration can state:

“Applicant believes the original patent to be partly inoperative or invalid by reason of the patentee claiming more or less than patentee had the right to claim in the patent.”

The language in Section 1414 of the M.P.E.P. goes on to state that where the specification and drawing is defective *and* the patentee claimed more or less than the patentee had a right to claim, then both statements should be included in the reissue oath/declaration. With respect to the Examiner’s position that the declaration is defective for the reasons set forth in paragraph 2 of

this section, the Examiner's attention is respectfully directed to pages 17-27 of the oath (Form 17-6) and the paragraph that states:

That the error listed above, which are [*sic*] being corrected, up to the time of the filing of this reissue declaration arose without any deceptive intention on the part of the applicant (37 C.F.R. §1.175(a)(2)).

It is respectfully submitted that the oath is in all respects proper.

Allowable Subject Matter

Applicant notes that no claim is allowed but respectfully request that in view of the foregoing amendments and remarks, all claims now presented for consideration are in condition for allowance.

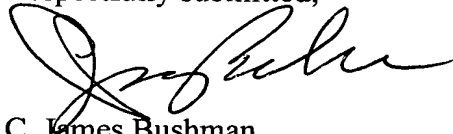
Comments on Art and Citations of Interest

Applicant has carefully reviewed various pieces of prior art discussed in the section of the Office Action commencing on page 29 and bridging over to page 31. In particular, McGrew '818 has been extensively discussed above. With respect to the other pieces of art referred to in this portion of the Office Action, it is respectfully submitted that none of those references, alone or in any combination, render Applicant's claims unpatentable.

Conclusion

In view of the foregoing amendments and remarks, it is respectfully submitted that all claims pending in the application are in condition for allowance, which is hereby earnestly solicited and respectfully requested.

Respectfully submitted,



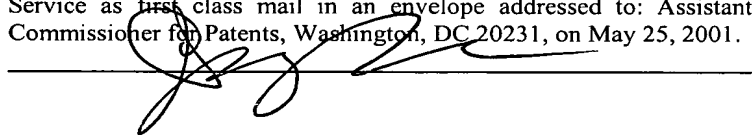
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CERTIFICATE OF MAILING

I, C. James Bushman, hereby certify that this correspondence and all referenced enclosures are being deposited with the United States Postal Service as first class mail in an envelope addressed to: Assistant Commissioner for Patents, Washington, DC 20231, on May 25, 2001.



CLEAN VERSION OF AMENDED SPECIFICATION

In column 3, in the first paragraph beginning after "Brief Summary of the Invention" at line 31:

2- The introduction of diffused oxygenation gas or air in a single location close to the substantially flat bottom and the cylindrical side wall of an aeration chamber produces a defined current or circulation pattern which generally maintains all solids in circulation and forces all fluid within a wastewater treatment plant into motion, overcoming dead spots created by interference patterns when two or more diffuser locations are used. The diffuser location close to the side wall and the bottom of the aeration chamber of the wastewater treatment plant forces a specific current or pattern of circulation which sweeps fluid from every portion of the plant such that solids will remain well mixed in solution instead of accumulating as sludge. This exposes all solids to efficient digestion by aerobic bacteria. In a preferred embodiment, an external oxygenation gas source supplies oxygenation gas, preferably air, through a flexible drop line or air line to the diffuser for release into the aeration chamber. The release of oxygenation gas at the diffuser location forces the defined current pattern in the tank while providing a sufficient supply of oxygen for the growth of the aerobic bacteria which digests the organic solid wastes. While the diffuser location can be a single location close to the side wall and near the bottom of

the wastewater treatment plant, a preferred embodiment includes placing the diffuser close to the side wall and close to the bottom such that the diffuser is substantially below the wastewater treatment plant inlet. When multiple air lines and diffusers must be used to provide sufficient quantities of oxygen, a preferred embodiment includes grouping all drop lines and diffusers in close proximity below the wastewater treatment plant inlet. Thus, the diffuser system, if comprised of multiple diffusers, is positioned such that the individual diffusers are in sufficiently close proximity to one another and adjacent the intersection of the side wall and the bottom wall such that the upwardly generated wastewater currents induce a branched current at the surface of the liquid in the aeration chamber, the branched current having a first run that moves in a first direction around the periphery of the aeration chamber and a second run that moves in the opposite direction around the periphery of the aeration chamber, the first and second runs meeting in an area generally diametrically opposite the inception of the branched current.

In column 5, in the paragraph beginning at line 12:

The defined current or circulation pattern produced by this embodiment, as shown in FIG. 1, is such that oxygenation gas forces the fluid within the aeration chamber to move upwards in direction 100 from the diffuser until it reaches the surface of the

liquid within the chamber. This forces a current which travels around the conical partition in both directions, as indicated by the numbers 102 and 104. As these currents meet on the opposite side of the partition, the intersection of the outer currents causes a downwardly flowing current 106 which flows to the bottom of the aeration chamber which creates main currents 108, 110, and 112 that sweep across the bottom in all directions. The water sweeping generally in a straight line across the bottom of the vessel in direction 108 moves with the greatest speed and serves to move any solid falling out of the clarifier chamber back into circulation in the aeration chamber, thus preventing any accumulation of solids in the bottom of the aeration chamber. The water moving generally around the outer perimeter of the vessel in directions 110 and 112 moves at a slower speed but with enough speed to scour the edges of the vessel and to sweep the solids into circulation. All areas of the bottom of the vessel are forced into circulation. Those areas intermediate between the path straight across the bottom of the vessel and the path around the outer perimeter travel respectively intermediate speeds. While FIG. 1 shows the entire circulation pattern, FIG. 5-7 show different views of parts of this pattern. As depicted in Figs. 1 and 6, the injection system generates an area of aerating bubbles adjacent the intersection of the side wall and the bottom wall that induces the current flow shown in Figs. 1 and 6. Thus, assuming

that direction 100 in Fig. 1 depicts the current flow of the wastewater induced at an injection area adjacent the intersection of the side wall and the bottom wall of the aeration chamber, a branched current having runs indicated by 102 and 104 is produced. Accordingly, multiple diffusers could be positioned in sufficient proximity to one another such that the current or circulation pattern depicted in Fig. 5 is achieved.

CLEAN VERSION OF AMENDED CLAIMS

1. **(Twice Amended)** In an aerobic wastewater treatment plant comprising:
a vessel defining an aeration chamber and having a substantially flat bottom wall and a cylindrical side wall,
said aeration chamber containing aerobic bacteria into which wastewater containing organic solids flows to be exposed to aerobic bacteria to aerobically digest the organic solids in the wastewater,
an aeration system in the aeration chamber to support growth of the aerobic bacteria, and
a clarifier chamber formed in said vessel and into which wastewater from the aeration chamber flows upwardly toward an outlet pipe through which the wastewater flows from the wastewater treatment plant, said clarifier chamber being defined by a partition in the form of an inverted, truncated cone into the bottom of which the wastewater flows from the aeration chamber,
the improvement wherein said aeration system forms an aeration area adjacent the intersection of the bottom and side walls of the vessel and provides sufficient flow such that all solids suspended within the plant are forced into circulation, said aeration system providing

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sufficient oxygenation gas to allow the aerobic bacteria to digest the organic solids in the wastewater and a current pattern having at least one first component flowing upwardly in a direction perpendicular to the bottom wall of the vessel and parallel to the side wall of the vessel, second and third components that flow in opposite directions around the partition that defines the clarifier chamber, a fourth component that flows along the opposite side wall to the bottom, a fifth component that flows across the bottom under the opening to the clarifier chamber, and sixth and seventh components that flow in opposite directions adjacent the bottom wall of the vessel.

5 4. **(Twice Amended)** The wastewater treatment plant of claim 3, further including:
a drop line having a first end attached to an external oxygenation source and a second end open to dispense oxygenation gas received from the external oxygenation gas source, said second end being attached to said aeration system.

6 5. **(Amended)** The wastewater treatment plant of claim 4, further including:
a rigid conduit mounted to the inside of the wastewater treatment plant for receiving and firmly securing the drop line such that the drop line extends from the oxygenation source towards the bottom of the plant.

7. **(Twice Amended)** In an aerobic wastewater treatment plant comprising:
a vessel having a substantially flat, bottom wall and a cylindrical side wall and defining an aeration chamber into which the wastewater flows to be exposed to aerobic bacteria to aerobically digest the organic solids in the wastewater, and

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a clarifier chamber in which wastewater from the aeration chamber flows upwardly toward an outlet pipe through which the wastewater flows from the wastewater treatment plant, said clarifier chamber being defined by a partition disposed in said vessel, said partition being

in the form of an inverted, truncated cone into the bottom of which the wastewater flows from the aeration chamber,

the improvement comprising means for injecting an oxygenation gas and generating a wastewater current pattern in the aeration chamber from an aeration area close to the bottom and the side wall of the vessel, the current flowing upwardly in a direction perpendicular to the bottom wall of the vessel and parallel to the side wall of the vessel, second and third components that flow in opposite directions around the partition which defines the clarifier chamber, a fourth component that flows along the opposite side wall to the bottom, a fifth component that flows across the bottom under the opening to the clarifier chamber, and sixth and seventh components that flow in opposite directions around the side wall of the vessel adjacent the bottom wall of the vessel to keep solids from settling on the bottom of the aeration chamber.

8. **(Amended)** The method of creating a current pattern inside an aeration chamber of a wastewater treatment plant, said aeration chamber having a bottom and side walls, comprising the step of

injecting an oxygenation gas such that a current pattern is produced in the aeration chamber, the current pattern having a first component flowing upwardly from a position close to the bottom and side wall of the aeration chamber in a direction perpendicular to the bottom of the aeration chamber and parallel to the side wall of the aeration chamber, first and second components flowing in opposite directions around the partition which defines a clarifier chamber, a third component flowing downwardly along the opposite side wall to the bottom, a fourth component flowing across the bottom under an opening to the clarifier chamber, and fifth and sixth components flowing in opposite directions around the side wall of the aeration chamber adjacent the bottom of the aeration chamber to keep solids from settling on the bottom of the aeration chamber.

9. **(Twice Amended)** An aerobic wastewater treatment plant comprising:

an aeration chamber containing aerobic bacteria into which wastewater flows to be exposed to aerobic bacteria to digest the organic solids in the wastewater, said aeration chamber having a substantially flat, bottom wall and a cylindrical side wall,

a clarifier chamber into which wastewater from the aeration chamber flows upwardly toward an outlet pipe through which the wastewater flows from the wastewater treatment plant, said clarifier chamber being defined by a partition in the form of an inverted, truncated cone into the bottom of which the wastewater flows from the aeration chamber, said bottom wall providing a substantially planar surface under said partition,

an aeration system for releasing an oxygenation gas as bubbles into the aeration chamber of the wastewater treatment plant, said aeration system providing an aeration area and sufficient flow such that all solids suspended within the plant are forced into a circulation pattern, said aeration system being placed close to the bottom of the aeration chamber of the wastewater treatment plant and close to the side wall of the aeration chamber, said aeration system providing sufficient oxygenation gas to allow the aerobic bacteria to digest the solids in the wastewater and a current pattern having at least one first component flowing upwardly in a direction perpendicular to the bottom wall of the vessel and parallel to the side wall of the vessel, second and third components that flow in opposite directions around the partition which defines the clarifier chamber, a fourth component that flows along the opposite side wall to the bottom, a fifth component that flows across the bottom under the opening to the clarifier chamber, and sixth and seventh components that flow in opposite directions adjacent the bottom wall of the vessel.

10. **(Twice Amended)** An aerobic wastewater treatment plant comprising:

an aeration chamber into which the wastewater flows to be exposed to aerobic bacteria to aerobically digest the organic solids in the wastewater, said aeration chamber having a substantially flat, bottom wall and a cylindrical side wall,

a clarifier chamber in which wastewater from the aeration chamber flows upwardly toward an outlet pipe through which the wastewater flows from the wastewater treatment plant, said clarifier chamber being defined by a partition in the form of an inverted, truncated cone into the bottom of which the wastewater flows from the aeration chamber, and

means for injecting an oxygenation gas and generating a wastewater current pattern in the aeration chamber, the current pattern having at least one first component flowing upwardly from a position close to the bottom and the side wall of the aeration chamber in a direction perpendicular to the bottom of the aeration chamber and parallel to the side wall of the aeration chamber, second and third components that flow in opposite directions around the partition which defines the clarifier chamber, a fourth component that flows downwardly along the opposite side wall to the bottom, a fifth component that flows across the bottom under the opening to the clarifier chamber, and sixth and seventh components that flow in opposite directions around the side wall of the aeration chamber adjacent the bottom of the chamber to keep solids from settling on the bottom of the aeration chamber.

17. **(Amended)** The wastewater treatment plant of claim 1 wherein said aeration system comprises multiple diffusers.

18. **(Amended)** The wastewater treatment plant of claim 7 wherein said means to generate said current comprises an injection system for creating an injection area adjacent the intersection of said side wall and said bottom wall.

19. **(Amended)** The wastewater treatment plant of claim 18 wherein said injection system comprises multiple diffusers.